



Federated SDN/NFV testbeds

Who I am

- Sebastiano Miano
- Master's Degree in Computer Engineering in December 2015 from Politecnico di Torino
- MSc thesis on “Partial Offloading of OpenFlow rules on a Hardware Switch ASIC” with Berlin Institute of Software Defined Networks, Germany
- After the master I developed a passion for the SDN and NFV world
- I became a Researcher at POLITO
- Now I started an Internship at EIT Digital in SF



Purpose of the Federated SDN project

- Federation is about creating larger entities by putting together smaller independent entities
 - These entities do not need to be “homogeneous” or “similarly structured”
 - We need to define rules of interaction between entities and the goal of the larger entity
- The value of a Federated Testbed is to provide a neutral level field for any party to experiment their ideas, products and services

Roadmap for EIT SF

1. Hardware and connectivity setup
2. Basic software setup
3. Orchestration setup
4. What's next?



Infrastructure setup in EIT SF

- In the EIT Digital office at RocketSpace we have available N servers which can be used to run our testbed
 - We need to interconnect this testbed with other parties
- In order to maintain the security between the connections we want to setup an IPSec Tunnel between the testbeds

Software to be installed

- In order to create an heterogeneous environment we have to decide what to run in these servers
- OpenStack domain?
- Support for SDN at the Edge?
 - Emulate a resource-constrained device
 - Useful for simulating a scenario in a small business environment

What to do next: #1 - Security?

- Of course, security is one of the most important topic we need to address
- An Identity Access Management (IAM) system is needed for:
 - Authentication
 - Authorization
 - Accounting
- Communication between entities and the exporting of resources from each domain are also important stuffs to be kept safe

What to do next: #2 – Orchestration?

- Support for different domains
 - Support OpenStack domains
 - Support pure network (e.g. OpenFlow) domains
 - Support resource-constrained devices (e.g., home gateways)
- Domain hierarchy and federation
 - Supports federated domains (in this case, which model is used for user authentication? The same user has to be present on all domains?)
- Network-related features
 - Supports fine-grained control of the network (for NFV services) (we may need to create direct paths between VMs. So need to configure traffic steering)
- Compute-related technical features
 - Supports VMs, Docker, microservices, etc...

Final Objectives

- Point to existing work, describe missing pieces and solutions
- Generate discussion about solutions
- Create awareness about required work
- Start working on it, building a community



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Thanks for your attention!